



# FACT SHEET

90TH SPACE WING

90th Space Wing Office of Public Affairs • 5305 Randall Avenue • F. E. Warren AFB, WY 82005-2266 • Phone (307) 773-3381

## Invitation to Comment on the Proposed Plan for Zone D Groundwater at F. E. Warren Air Force Base, Wyoming

You have the opportunity to comment on the Proposed Plan for the final remedy for Zone D Groundwater at F. E. Warren Air Force Base, Wyoming. Zone D Groundwater includes Plumes A, B, C, and E, and Spill Site 7 (SS7)(Figure 1). The recommended remedies for each of the plumes are described below. Additionally, the final remedy also recommends no further action for the former Landfill 2 (LF2), SS2, SS4 and Fire Protection Training Area 2 (FPTA2). These sites are located within the Zone D study area, and as a group make up Operable Units 2 and 9. The United States Air Force (USAF), United States Environmental Protection Agency (EPA), and Wyoming Department of Environmental Quality (WDEQ) want to hear your views about the plans for these sites. A public meeting will be held February 22, 2005 at the Little America Hotel and Resort in Cheyenne, Wyoming.

After completion of site investigations and careful study of the results, the USAF and EPA have determined that there are currently no significant risks to human health and the environment within Zone D. However, contaminant concentrations in the groundwater exceed the State groundwater standards and because the groundwater is classified by the State as a potential drinking water source, actions will be taken to treat the groundwater to these standards. The contaminated groundwater has also been documented to discharge into Crow Creek and actions will be taken to treat the water to ensure that the contaminant concentrations do not exceed State surface water standards. WDEQ concurs with these determinations.

### Final Remedy for Zone D Groundwater

The final remedy for Zone D groundwater addresses five separate plumes of volatile organic compounds (VOCs) - Plumes A, B, C and E, and SS7. The VOCs in groundwater consist of trichloroethene (TCE) and its break down products (i.e., dichloroethene and vinyl chloride). The VOCs are found in both shallow- and intermediate-depth groundwater zones. Different technologies may apply to these zones because of varying aquifer properties and VOC concentrations. The USAF, EPA, and WDEQ have selected the following remedies for each plume:

**Plume A:** Monitored Natural Attenuation (MNA) has been selected for both the shallow and intermediate groundwater zones. The VOCs will attenuate naturally through dispersion, adsorption, and volatilization and maximum contaminant levels (MCLs) will be achieved in an estimated 120 years.

**Spill Site 7:** The selected remedy includes a combination of 1) the existing permeable reactive barrier (PRB) to protect surface water and degrade VOCs in shallow groundwater, 2) bioaugmentation to address the VOCs in upgradient portions of the shallow plume, 3) chemical oxidation within the intermediate zone using potassium permanganate (KMnO<sub>4</sub>), and 4) MNA following the active treatments. VOCs in groundwater would achieve MCLs in an estimated 175 years. In addition, channel drop structures will be placed within Diamond Creek to promote aeration and volatilization of VOCs in the surface water.

**Plume B:** The selected remedy consists of chemical oxidation in the shallow and intermediate zones. MNA will further degrade the VOCs to MCLs for a total clean-up time of 35 years.

**Plume C:** The selected remedy includes chemical oxidation in the shallow zone at the plume head and at selected "hot spots" within the plume, a PRB at the intercept of the plume with Crow Creek to reduce VOCs discharging to surface water, and MNA

throughout the remainder of the plume. VOC concentrations throughout the plume will achieve MCLs in approximately 100 years.

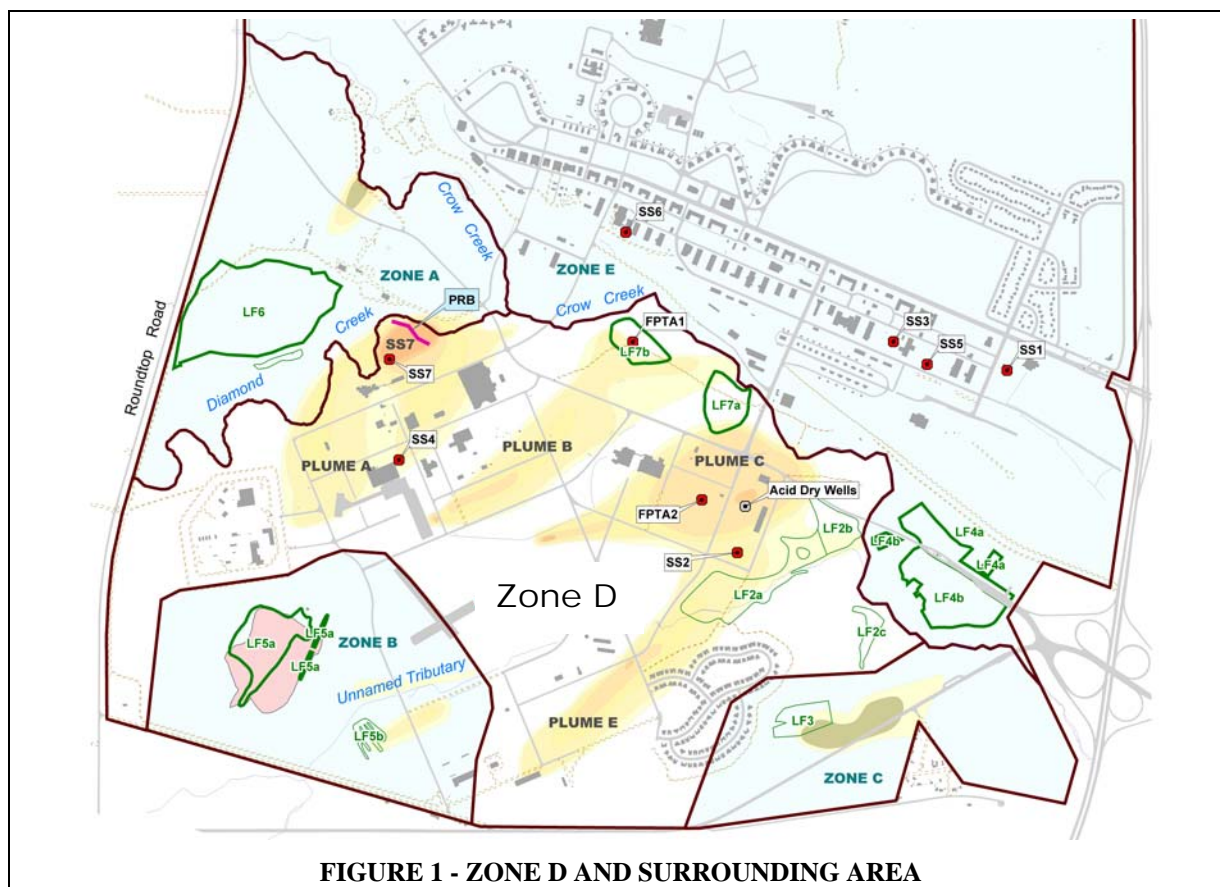
**Plume E:** The selected remedy includes MNA and continued use of the PRB for the shallow groundwater zone and localized chemical oxidation within the intermediate zone. MNA will treat the remainder of the plume and MCLs will be achieved in 105 years.

A network of monitoring wells will be sampled for each plume to ensure that the active treatments and natural attenuation are occurring as anticipated. During the time frames for clean up of each plume, the plume's size and contaminant mass will progressively be reduced.

In addition to addressing groundwater contamination in each of the five plumes, the final remedy also recommends no further action at SS2, SS4, FPTA2, and LF2. These sites lie within the footprint of the larger plumes (i.e., Plumes A, C, and E); however, there is no evidence that these individual spill sites or the landfill have impacted or will impact groundwater at these locations. Therefore, no further action is planned for SS2, SS4, FPTA2, and LF2.

### Your Comments

Before making a final decision, we want to hear what you think. We encourage you to find out more about this action and make your views and concerns known. You may make comments at the public meeting. You also have until March 9, 2005 to supply written comments on the Proposed Plan or related information in the Information Repository. At the end of the comment period, the USAF, EPA, and WDEQ will review the suggestions and make a decision about the final remedy. Your input on the Proposed Plan is an important part of the decision-making process. Once the final decision is made, it will be formalized in a Record of Decision. That document will include a summary of comments received from the public along with how these comments changed the decision that was reached.



## Tell Us What You Think

### Location of Information Repository



Laramie County Library  
2800 Central Avenue  
Cheyenne, WY 82001  
Phone: (307) 634-3561  
Hours: Monday – Thursday 10 a.m. to 9 p.m.  
Friday – Saturday 10 a.m. to 6 p.m.

**The comment period runs from:**

**February 7, 2005  
Through  
March 9, 2005**

### Submit Written Comments



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## Attend the Public Meeting



Public Meeting:

You are invited to a meeting to hear about the Proposed Plan for Zone D Groundwater. At the meeting, you will be able to state your views about the sites. The meeting will be:

**February 22, 2005  
7:00 p.m.  
at  
Little America Hotel and Resort  
Regency Room  
2800 West Lincolnway  
Cheyenne, WY 82001**

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F. E. WARREN AFB, WY 82005-2266

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